

VOLENTINE WHITT PLLC  
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APR 10 2007

Serial No. 10/766,739

OKI.612

Amendment dated April 10, 2007

**Amendments to the Claims**

This listing of claims will replace all prior versions, and listings of claims in the application:

**Listing of Claims:**

Claims 1-11 (Canceled)

Claim 12 (Previously Presented): A wiring structure of a semiconductor device, comprising:

a first insulating film having plural grooves formed therein, which has an interface in a horizontal direction between adjoining grooves;

plural wiring films formed in the grooves of the first insulating film to protrude above the interface;

plural barrier films formed on bottoms of the wiring films, and formed on side faces of the wiring films to a height exceeding the interface; and

plural cap films formed at least on upper faces of the wiring films, and which are each separated by the grooves,

wherein the first insulating film has plural protrusions protruding from the interface, and the grooves are formed in the protrusions,

wherein the upper faces of the wiring films and the barrier films are substantially coincident with upper ends of the grooves, and

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wherein the protrusions are formed through etching the first insulating film, using the cap films as a mask, and the cap films have substantially the same shape as uppermost faces of the protrusions.

Claim 13 (Original): A wiring structure of a semiconductor device as claimed in Claim 12, wherein the cap films are a metal film made of  $Ta_xN_y$ , Ta, or  $Ta_xSi_yN_z$ .

Claim 14 (Original): A wiring structure of a semiconductor device as claimed in Claim 12, wherein the cap films are a metal film made of  $Ti_xN_y$  or  $Ti_xSi_yN_z$ .

Claim 15 (Original): A wiring structure of a semiconductor device as claimed in Claim 12, wherein the cap films are a metal film made of  $W_xN_y$  or  $W_xSi_yN_z$ .

Claim 16 (Original): A wiring structure of a semiconductor device as claimed in Claim 12, wherein the cap films are an insulating film containing  $Si_xN_y$ ,  $Si_xO_yN_z$ ,  $Si_xC_y$ , or  $Si_xC_y$  as a principal composition.

Claims 17-27 (Canceled)

Claim 28 (Previously Presented): A wiring structure of a semiconductor device, comprising:

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a first insulating film having plural protrusions in which grooves are formed, and which has an interface in a horizontal direction between adjoining protrusions; plural wiring films embedded in the grooves on barrier films; plural first cap films formed on upper faces of the protrusions; and second cap films formed on the first cap films and the first insulating film, wherein the protrusions are formed through etching the first insulating film, using the first cap films as a mask, and the first cap films have substantially the same shape as uppermost faces of the protrusions.

Claim 29 (Original): A wiring structure of a semiconductor device as claimed in Claim 28, wherein the first cap films are a metal film made of  $Ta_xN_y$ , Ta, or  $Ta_xSi_yN_z$ .

Claim 30 (Original): A wiring structure of a semiconductor device as claimed in Claim 28, wherein the first cap films are a metal film made of  $Ti_xN_y$  or  $Ti_xSi_yN_z$ .

Claim 31 (Original): A wiring structure of a semiconductor device as claimed in Claim 28, wherein the first cap films are a metal film made of  $W_xN_y$  or  $W_xSi_yN_z$ .

Claim 32 (Original): A wiring structure of a semiconductor device as claimed in Claim 28, wherein the second cap films are an insulating film containing  $Si_xN_y$ ,  $Si_xO_yN_z$ ,  $Si_xC_y$ , or  $Si_xC_y$  as a principal composition.

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Claim 33 (Previously Presented): A wiring structure of a semiconductor device as claimed in Claim 12, wherein the cap films are a metal film containing tungsten as a principal composition.

Claim 34 (Previously Presented): A wiring structure of a semiconductor device as claimed in Claim 28, wherein the first cap films are a metal film containing tungsten as a principal composition.